TECHNICAL READFILE

Papers are organized by topic then sub-divided into seminal studies (red), climatologies (blue), forecast techniques (green) and case studies (purple).

Abbreviations:
WF - Weather and Forecasting
JAS - Journal of Atmospheric Science
BAMS - Bulletin of the AMS
SLS - AMS Severe Local Storms Conf.
MP - AMS Mesoscale Processes Conf.
RM - AMS Radar Meteorology Conf.
TPB - NWS Technical Procedures Bulletin
TM - NWS Technical Memo
MWR - Monthly Weather Review
JAM - Journal of Applied Meteorology
NWD - National Weather Digest
WAF - AMS Weather Analysis and Forecasting Conf.
OM - AMS Operational Meteorology Conf.
TA - NWS Regional Technical Attachment
ARP - NWS Central Region Applied Research Paper

VOLUME 1: SEVERE CONVECTION
Bow Echoes, Derechos, Downbursts, Flash Floods, MCSs, Squall Lines, Supercells, Tornadoes, Synoptic/Mesoscale
VOLUME 2: WINTER STORMS
CSI, Potential Vorticity, QG Theory, Winter Precip Type, Synoptic/Mesoscale
VOLUME 3: GENERAL
Radar, Synoptic/Mesoscale

BOW ECHOES / DERECHOS

B1 Objectives, Operation, and Results of Project NIMROD,
Fujita, 11th Conf. SLS/79.

B2 The Reliability of the Bow Echo as an Important Severe Weather Signature,
Przybylinski and Gery, 13th Conf. SLS/83.

B3 Derechos: Widespread Convectively Induced Windstorms,
Johns and Hirt, WF 3/87.

B4 Conditions Associated with Long-lived Derechos - An Examination of the Large-scale Environment,
Johns, Howard and Maddox, 16th Conf. SLS/90.

B5 The Genesis of Severe, Long-Lived Bow Echoes,
Weisman, JAS 2/93.

B6 The Bow Echo: Observations, Numerical Simulations, and Severe Weather Detection Methods,
Przybylinski, WF 6/95.

B7 Vortex Structure and Evolution within Bow Echoes. Part 1: Single-Doppler and Damage Analysis of the 29 June 1998 Derecho,
Atkins, Arnott, Przybylinski, Wolf and Ketcham, MWR 9/04.

B8 Meteorological Conditions Associated with Bow Echo Development in Convective Storms,
Johns, WF 6/93.

B9 Interpreting the Climatology of Derechos,
Coniglio and Stensrud, WF 6/04.

B10 An Observational Study of Derecho-Producing Convective Systems,
Coniglio, Stensrud and Richman, WF 4/04.

B11 The Use of Real-Time WSR-88D, Profiler, and Conventional Data Sets in Forecasting a

Northeastward Moving Derecho over Eastern Missouri and Central Illinois,
Przybylinski, Lin, Schmocker and Shea, 14th Conf. WAF/95.

CSI

C1 The Use and Misuse of Conditional Symmetric Instability,
Schultz and Schumacher, MWR 12/99.

C2 Mesoscale Structure in the Megalopolitan Snowstorm of 11-12 February 1983. Part I:
Frontogenetical Forcing and Symmetric Instability,
Sanders and Bosart, JAS 5/85.

DOWNBURSTS

D1 Numerical Simulations of an Isolated Microburst. Part II: Sensitivity Experiments,
Proctor, JAS 7/89.

D2 Wet Microburst Activity over the Southeastern United States: Implications for Forecasting,
Atkins and Wakimoto, WF 12/91.

D3 A Proposed Microburst Nowcasting Procedure Using Single-Doppler Radar,
Roberts and Wilson, JAM 4/89.

D4 Forecasting Dry Microburst Activity over the High Plains,
Wakimoto, MWR 7/85.

FLASH FLOODS

F1 Synoptic and Meso-α Scale Aspects of Flash Flood Events,
Maddox, Chappell and Hoxit, BAMS 2/79.

F2 The Environment of Warm-Season Elevated Thunderstorms Associated with Heavy Rainfall over the Central United States,
Moore, Glass, Graves, Rochette, Singer, WF 10/03.

F2 Forecasting Techniques Utilized by the Forecast Branch of the National Meteorological Center During a Major Convective Rain Event,
Funk, WF 12/91.

F3 The Water Vapor Imagery/Theta-E Connection with Heavy Convective Rainfall,
Scofield and Robinson, Sat. Appl. Note 90/7.

F4 Flash Flood-Producing High-Precipitation Supercells in Missouri,
Moore, Nolan, Glass, Ferry and Rochette, 14th Conf. WAF/95.

F5 A Study of Heavy Rainfall Events during the Great Midwest Flood of 1993,
Junker, Schneider and Fauver, WF 10/99.

F6 The Minneapolis Flash Flood: Meteorological Analysis and Operational Response,
Schwartz, Chappell, Togstad and Zhong, WF 3/90.

F7 Synoptic Weather Patterns Associated with the Milwaukee, Wisconsin Flash Flood of 6

August 1986,
Elsner, Drag and Last. WF 12/89.

MCSs

M1 Mesoscale Convective Complexes,
Maddox, BAMS 11/80.

M2 Large-scale Meteorological Conditions Associated with Midlatitude Mesoscale Convective Complexes,
Maddox, MWR 7/83.

M3 Midlevel Cyclonic Vortices Generated by Mesoscale Convective Systems,
Bartels and Maddox, MWR 1/91.

M4 Rear Inflow in Squall Lines with Trailing Stratiform Precipitation,
Smull and Houze, MWR 12/87.

M5 Interpretation of Doppler Weather Radar Displays of Midlatitude Mesoscale Convective Systems,
Houze, Rutledge, Biggerstaff and Smull, BAMS 6/89.

M6 The Oklahoma-Kansas Mesoscale Convective System of 10-11 June 1985: Precipitation Structure and Single-Doppler Radar Analysis,
Rutledge, Houze, Biggerstaff, and Matejka, MWR 7/88.

M7 The Relationship of Surface Pressure Features to the Precipitation and Airflow Structure of an Intense Midlatitude Squall Line,
Johnson and Hamilton, MWR 7/88.

M8 Three-Dimensional Evolution of Simulated Long-Lived Squall Lines,
Skamarock, Weisman and Klemp, JAS 9/94.

M9 Evolution of Quasi-Two-Dimensional Squall Lines. Part I: Kinematic and Reflectivity Structure,
Rasmussen and Rutledge, JAS 8/93.

M10 Organizational Modes of Midlatitude Mesoscale Convective System,
Parker and Johnson, MWR 10/00.

M11 Precipitation Characteristics of Mesoscale Convective Weather Systems,
Kane, Chelius and Fritsch, JAM 10/87.

M12 Distribution of Mesoscale Convective Complex Rainfall in the United States,
Ashely et al, MWR 12/03.

M13 Lower-Tropospheric Precursors to Nocturnal MCS Development over the Central United States,
Augustine and Caracena, WF 3/94.

M14 Propagation Characteristics of Mesoscale Convective Systems,
Moore, Pappas and Glass, 17th Conf. SLS/93.

M15 Predicting the Movement of Mesoscale Convective Complexes,
Corfidi, Merritt and Fritsch, WF 3/96.

M16 Cold Pools and MCS Propagation: Forecasting the Motion of Downwind-Developing MCSs

Corfidi, WF 12/03.

POTENTIAL VORTICITY

PV1 Tropopause Undulations and the Development of Extratropical Cyclones. Part I: Overview and Observations from a Cyclone Event,
Hirschberg and Fritsch, MWR 2/91.

PV2 Tropopause Undulations and the Development of Extratropical Cyclones. Part II: Diagnostic Analysis and Conceptual Model,
Hirschberg and Fritsch, MWR 2/91.

PV3 The Role of Tropopause Undulation in the Development of the "Blizzard of '93" (12-15 March 1993),
Holiway and Smith, 14th Conf. WAF/95.

PV4 A Forecast and Analyzed Cyclogenesis Event Diagnosed with Potential Vorticity,
Bresky and Colucci, MWR 10/96.

QG THEORY

Q1 The Diagnosis of Synoptic-Scale Vertical Motion in an Operational Environment,
Durran and Snellman, WF 3/87.

Q2 Diagnosing an Operational Numerical Model Using Q-Vector and Potential Vorticity Concepts,
Barnes and Colman, WF 3/94.

Q3 Quasigeostrophic Diagnosis of Cyclogenesis Associated with a Cutoff Extratropical Cyclone - The Christmas 1987 Storm,
Barnes and Colman, MWR 6/93.

Q4 A Comparison of Quasigeostrophic and Nonquasigeostrophic Vertical Motions for a Model-simulated Rapidly Intensifying Marine Extratropical Cyclone,
Pauley and Nieman, MWR 7/92.

RADAR

R1 Single Doppler Radar Vortex Recognition: Part 1 - Mesocyclone Signatures,
Burgess, 17th Conf. RM/76.

R2 Single Doppler Radar Vortex Recognition: Part 2 - Tornadic Vortex Signatures,
Brown and Lemon, 17th Conf. RM/76.

R3 Effects of Radar Sampling on Doppler Velocity Tornado Vortex Signatures,
Wood, WF 12/97.

R4 Forecasting the Initial Onset of Damaging Downburst Winds Associated with a Mesoscale Convective System (MCS) Using the Mid-altitude Radial convergence (MARC) Signature,
Schmocker, Przybylinski and Lin, 15th Conf. WAF/96.

R5 VIL Density as a Hail Indicator,
Amburn and Wolf, 18th Conf. SLS/96.

R6 Recognition of the Radar "Three-Body Scatter Spike" as a Large Hail Signature,
Lemon, 27th Conf. RM/95.

R7 The Lahoma Storm Deep Convergence Zone: Its Characteristics and Role in Storm Dynamics and Severity,
Lemon and Parker, 18th Conf. SLS/96.

R8 The Origin and Evolution of the WSR-88D Mesocyclone Recognition Nomogram,
Andra, 28th Conf. RM/97.

SUPERCELLS

S1 The Structure and Classification of Numerically Simulated Convective Storms in Directionally Varying Wind Shears,
Weisman and Klemp, MWR 12/84.

S2 On the Rotation and Propagation of Simulated Supercell Thunderstorms,
Rotunno and Klemp, JAS 2/85.

S3 The Operational Recognition of Supercell Thunderstorm Environments and Storm Structure,
Moller, Doswell, Foster and Woodall, WF 9/94.

S4 The Role of Midtropospheric Winds in the Evolution and Maintenance of Low-Level Mesocyclones,
Brooks and Doswell, MWR 1/94.

S5 Variations in Supercell Morphology. Part 1: Observations of the Role of Upper-Level Storm-Relative Flow,
Rasmussen and Straka, MWR 9/98.

S6 The Influence of Preexisting Boundaries on Supercell Evolution,
Atkins, Weisman, and Wicker, MWR 12/99.

S7 The Sensitivity of Simulated Supercell Structure and Intensity to Variations in the Shapes of Environmental Buoyancy and Shear Profiles,
McCaul and Weisman, MWR 4/01.

S8 Characteristics of Supercell Hodographs,
Brown, 16th Conf. SLS/90.

S9 On the Use of Vertical Wind Shear versus Helicity in Interpreting Supercell Dynamics,
Weisman, 18th Conf. SLS/96.

S10 The Rapid Evolution of a Tornadic Supercell; Observations and Simulation,
Foster, Moller, Wicker and Cantrell, 14th Conf. WAF/95.

S11 A Study of Mini Supercells Observed by WSR-88D Radars,
Burgess, Lee, Parker and Floyd, 27th Conf. RM/95.

S12 Doppler Radar Observations of High-Precipitation Supercells over the Mid-Mississippi Valley Region,
Przybylinski, Shea, Ferry, Goetsch, Czys and Wescott, 17th Conf. SLS/93.

S13 The Tristate Hailstorm: The Most Costly on Record,
Changnon and Burroughs, MWR 8/03.

SYNOPTIC/MESOSCALE (GENERAL)

GE1 A Proposed Forecast Methodology,
Bullock, 1st Conf. OM/86.

GE2 The Importance of Comparing Data and the Model Analysis,
Meier, NWS WRH TA 93-21.

GE3 Organization of Clouds and Precipitation in Extratropical Cyclones,
Browning, Extratropical Cyclones/90.

GE4 Reexamining the Cold Conveyor Belt,
Schultz, MWR 9/01.

GE5 Processes Contributing to the Rapid Development of Extratropical Cyclones,
Uccellini, Extratropical Cyclones/90.

GE6 The Effect of Jet-streak Curvature on Kinematic Fields,
Moore and VanKnowe, MWR 11/92.

GE7 The Synoptic Setting and Possible Energy Sources for Mesoscale Wave Disturbances,
Uccellini and Koch, MWR 3/87.

GE8 Model Consensus,
Fritsch, Hilliker, Ross and Vislocky, WF 10/00.

SYNOPTIC/MESOSCALE (CONVECTIVE)

CO1 Severe Local Storms Forecasting,
Johns and Doswell, WF 12/92.

CO2 The Distinction Between Large-scale and Mesoscale Contribution to Severe Convection: A Case Study Example,
Doswell, WF 3/87.

CO3 Initiation of Convective Storms at Radar-Observed Boundary-Layer Convergence Zones,
Wilson and Schreiber, MWR 12/86.

CO4 Sensitivity of Convection Initiation to Low-Level Thermodynamic Fields,
Crook, 18th Conf. SLS/96.

CO5 A Synoptic Climatology of Northwest Flow Severe Weather Outbreaks. Part I: Nature and Significance,
Johns, MWR 11/82.

CO6 A Synoptic Climatology of Northwest Flow Severe Weather Outbreaks. Part II: Meteorological Parameters and Synoptic Patterns,
Johns, MWR 3/84.

CO7 Thunderstorms above Frontal Surfaces in Environments without Positive CAPE. Part I: A

Climatology,
Colman, MWR 5/90.

CO8 Thunderstorms above Frontal Surfaces in Environments without Positive CAPE. Part II: Organization and Instability Mechanisms,
Colman, MWR 5/90.

CO9 A High Time-resolution Climatology of the Low-level Jet: Implications for Forecasting Mesoscale Convection,
Mitchell, Arritt, Dudley and Labas, 17th Conf. SLS/93.

CO10 The Relationship Between Jet Streaks and Severe Convective Storm Systems,
Uccellini, 16th Conf. SLS/90.

CO11 Cold Fronts Aloft and the Forecasting of Precipitation and Severe Weather East of the Rockies,
Hobbs, Locatelli and Martin, WF 12/90.

CO12 Temporal Evolution of the 700-500mb Lapse Rate as a Forecasting Tool - A Case Study,
Doswell, Caracena and Magnano, 14th Conf. SLS/85.

CO13 A Review for Forecasters on the Application of Hodographs to Forecasting Severe Thunderstorms,
Doswell, NWD 2/91.

CO14 Preliminary Assessment in the Use of 404 Mhz Wind Profilers to Determine Severe Weather Potential,
Beckman, 17th Conf. SLS/93.

CO15 Aspects of a Convective System as Seen through New Data Sets,
Walawender and Labas, 17th Conf. SLS/93.

CO16 The Isallobaric Wind as a Forcing Function on Fields of Helicity,
Togstad, NWS CRH ARP 13-10/94.

CO17 The Importance of Parcel Choice and the Measure of Vertical Wind Shear in Evaluating the Convective Environment,
Bunkers, Klimowski and Zeitler, 21st Conf. SLS/02.

CO18 The Severe Convective Storms of 14-16 May 1990,
Rolinski and Moore, NWD 2/92.

SYNOPTIC/MESOSCALE (WINTER)

W1 The Interaction of Jet Streak Circulations During Heavy Snow Events Along the East Coast of the United States,
Uccellini and Kocin, WF 12/87.

W2 Using the Mesoscale Analysis and Prediction System to Pinpoint Heavy Snowfall over Southeast Colorado,
Holmes, NWD 2/93.

W3 An Aid to Forecasting Heavy Snowfall Episodes,
Auer, NWD 5/87.

W4 Vertical Motion Forcing Mechanisms Responsible for the Production of a Mesoscale Very Heavy Snow Band,
Funk, Hayes, Scholz and Kostura, 14th Conf. WAF/95.

W5 Forecasting the Northern Extent of Significant Snowfall in a Major Winter Storm: An Operational Forecasting Problem,
Shea and Przybylinski, 14th Conf. WAF/95.

W6 Updated Satellite Technique to Forecast Heavy Snow,
Johnston, WF 6/95.

W7 Forecasting the Impacts of Strong Wintertime Post-Cold Front Winds in the Northern Plains,
Kapela, Leftwich and van Ess, WF 6/95.

W8 Forecasting Snowfall Amounts Using Mixing Ratios on an Isentropic Surface: An Update,
Garcia, NWS TM CR-116.

W9 Mesoscale Dynamics of the Record-Breaking 10 November 1998 Mid-latitude Cyclone: A Satellite -based Case Study.
Iacopelli and Know, NWD 5/01.

TORNADOES

T1 Tornadoes and Tornadic Storms: A Review of Conceptual Models,
Doswell and Burgess, The Tornado/93.

T2 Severe Thunderstorm Evolution and Mesocyclone Structure as Related to Tornadogenesis,
Lemon and Doswell, MWR 9/79.

T3 Non-supercell Tornadoes,
Wakimoto and Wilson, MWR 6/89.

T4 A Case Study of Nonmesocyclone Tornado Development in Northeast Colorado: Similarities to Waterspout Formation
Brady and Szoke, MWR 4/89.

T5 Environmental Helicity and the Maintenance and Evolution of Low-Level Mesocyclone,
Brooks, Doswell and Davies-Jones, The Tornado/93.

T6 The Occurrence of Tornadoes in Supercells Interacting with Boundaries during VORTEX-95,
Markowski, Rasmussen and Straka, WF 9/98.

T7 Observations of Nontornadic Low-Level Mesoscyclones and Attendant Tornadogenesis Failure during VORTEX,
Trapp, MWR 7/99.

T8 Descending and Nondescending Tornadic Vortex Signatures Detected by WSR-88Ds,
Trapp, Mitchell, Tipton, Effertz, Watson, Andra and Magsig, WF 10/99.

T9 The Numerical Simulation of Nonsupercell Tornadogenesis. Part II: Evolution of a Family of Tornadoes along a Weak Outflow Boundary,
Lee and Wilhelmson, MWR 10/97.

T10 A Case Study of Nonmesocyclone Tornado Development in Northeast Colorado: Similarities to

Waterspout Formation
Brady and Szoke, MWR 4/89.

T11 On the Environments of Tornadic and Nontornadic Mesocyclones,
Brooks, Doswell and Cooper, WF 12/94.

T12 Lake Breezes in Southern Ontario and Their Relation to Tornado Climatology,
King et al, WF 10/83.

T13 Tornadoes from Squall Lines and Bow Echoes. Part I: Climatological Distribution
Trapp, Tessendorf, Godfrey and Brooks, WF ?/?.

T14 Test of Helicity as a Tornado Forecast Parameter,
Davies-Jones, Burgess and Foster, 16th Conf. SLS/90.

T15 Helicity Trends in Tornado Outbreaks,
Davies-Jones, 17th Conf. SLS/93.

T16 The 'Short Fuse' Composite: An Operational Analysis Technique for Tornado Forecasting,
Johnson, The Tornado/93.

T17 Some Mesoscale Aspects of the 6 June 1900 Limon, Colorado Tornado Case,
Weaver, Purdom and Szoke, WF 3/94.

T18 Barron County, Wisconsin, Multiple Tornadoes and Hailstorms of 11 September 1990,
Jungbluth, WF 12/93.

T19 Evolution of the Red Rock, Oklahoma Supercell of April 26, 1991,
Burgess and Magsig, 17th Conf. SLS/93.

T20 A Detailed Analysis of the Tornado Outbreak of March 13, 1990,
Kleya, 17th Conf. SLS/93.

T21 The Pulaski County and West Lafayette, Indiana Tornadoes, 26-27 April, 1994: A Case of Supercell (Mesocyclone) and Squall Line Bow-Echo Interaction,
Sabones, Agee and Akridge, 18th Conf. SLS/96.

T22 On the Role of Outflow Boundary Interactions with Bow Echoes in the Development of Non-Supercell Tornadoes,
Elson, 18th Conf. SLS/96.

T23 The Association of Significant Tornadoes with a Baroclinic Boundary on 2 June 1995
Rasmussen, Richardson, Straka, Markowski, and Blanchard, MWR 1/00.

WINTER PRECIPITATION TYPE

PT1 An Analysis of Freezing Rain, Freezing Drizzle, and Ice Pellets across the United States and Canada: 1976-90
Cortinas, Bernstein, Robbins and Strapp, WF 4/04.

PT2 Winter Precipitation Type,
McNulty, NWS CRH TA 88-4.

PT3 The Objective Use of Observed and Forecast Thickness Values to Predict Precipitation Type in

North Carolina,
Keeter and Cline, WF 12/91.

PT4 Snow versus Rain: Looking beyond the “Magic” Numbers,
Heppner, WF 12/92.

PT5 A Method to Determine Precipitation Types
Bourgouin, WF 10/00.

PT6 Using Wind Profiler Data as an Aid in Forecasting Winter Precipitation,
Walawender, NWS CRH TA 11-01.

CLIMATE